



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

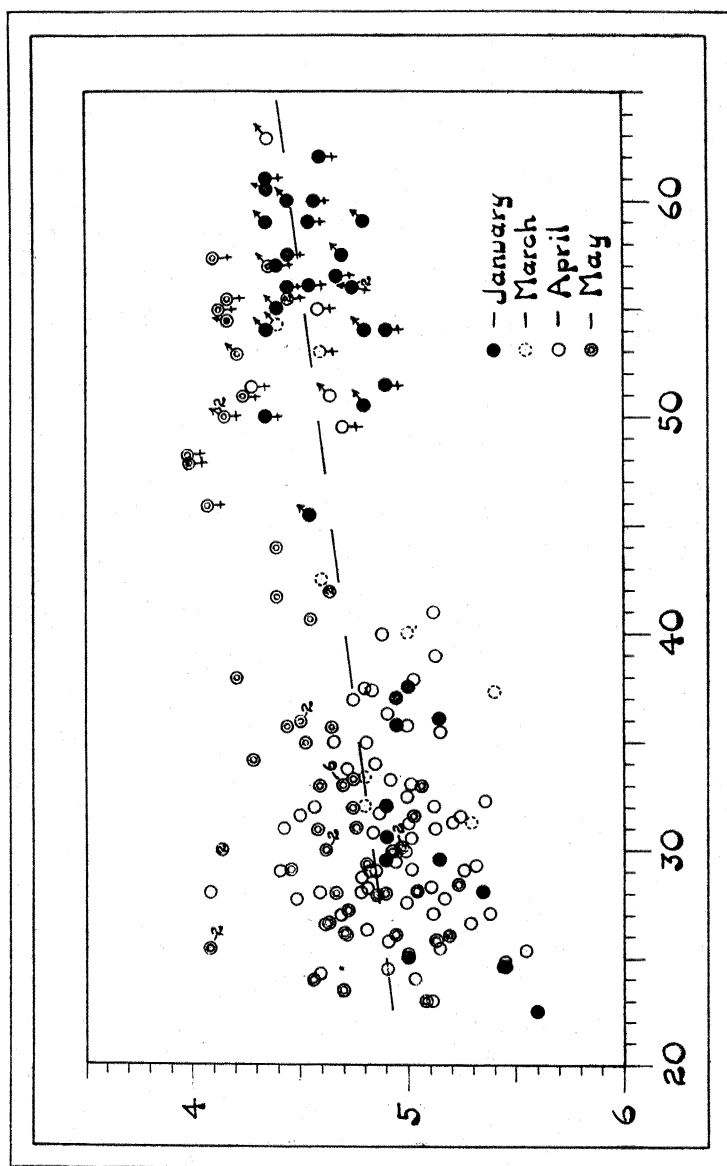


Published to advance the Science of cold-blooded vertebrates

FURTHER NOTES ON *Leuciscus vandoisulus* (CUV. & VAL.)

Jordan and Evermann (1896, "The fishes of North and Middle America") state that in this species "the largest specimens are most elongate." The writer in making a collection of this Cyprinoid from a single site in a run near Washington, D. C. (*Copeia*—May 20, 1920, No. 82, pp. 35-38) in January, March, April and May of this year found exactly the opposite condition to exist, which would be just the expected variation when it is considered that the large majority of fishes are more slender in early life, while the proportions found by the above-mentioned authority are highly unusual.

In the accompanying diagram the horizontal scale indicates standard lengths in millimeters, and the vertical scale body depths, times in the respective standard lengths. Each circle indicates one individual except where numbers call attention to the superposition of more than one. Various symbols have been used as indicated to differentiate the four collections. February is not represented owing to the fact that our seine yielded no specimens of this species during that month. The sex is marked with the conventional symbols where it was possible to determine it with the aid of a simple lens. The diagonal dashed line, computed from arithmetical averages, roughly indicates the moving trend and distinctly shows the



larger specimens to be deeper than the small ones, which places these fishes in direct contradiction to

the relative proportions that Jordan and Evermann ascribe to the species. It is also evident that immature specimens are much more variable in this respect than adults, for while the average body depth is less the range almost includes that of the adults.

The diagram also indicates that as the season advances the fishes become deeper, which no doubt can be attributed to heavier feeding and in the case of mature individuals, to increased bulk of the generative organs and their products. A comparison of those taken in January and in May brings out this fact well, it being seen, especially in the mature fish, that those taken in May form quite a distinct group from the January specimens.

The division of the year classes, as noted in the previous paper, is well indicated in this diagram. Of course the cluster including the sex symbols represents the mature group while the other forms the immature. The writer believes that the nine individuals grouped between 40 and 45 mm. in standard lengths can without doubt be designated either as precocious yearlings or excessively backward specimens of the two-year class. Probably examples of both extremes are there present.

A character of marking retained in preserved material, though not mentioned in any description so far found by the writer, is a narrow dusky line that has its origin about midway between the insertion of the dorsal fin and the operculum in the upper margin of the light lateral band immediately over the plumbeous one. From this point it runs backward and down, cutting diagonally across the light band and merging with the plumbeous streak below the base of the last dorsal ray but still traceable out onto the caudal peduncle, although confluent with the heavier stripe. This mark is not at the surface but lies directly below it and is visible at the points mentioned only because

it is there not superimposed upon by opaque pigments. This line is apparently a mere concentration of pigment in the fascia covering the myotomes along the division separating the dorsal from the ventral series. Other lines similar but lighter, and not visible through the scales, are present between each consecutive myotome. While this is said to be found in other Cyprinidae, such as *Chrosomus* and other species of the genus *Leuciscus*, the writer has found it extremely useful in roughly separating the very small individuals of this species from others of the family similar in general aspects and taken from this particular locality.

In the belief that a comparison of measurements might prove useful to other workers, there are appended below the averages which the writer obtained from 36 representative specimens, as compared with corresponding measurements quoted from Jordan and Evermann's publication of 1896 and Fowler's Synopsis of the Cyprinidae of Pennsylvania, 1908.

	Fowler	J. & E.	Breder
Head	3 2/5-4	3 2/3	3.78
Eye	27/8-3 1/2	3 1/2	3.43
Maxillary	2-2 1/3	....	2.56
Interorbital .....	....	....	2.86
Snout	3 1/8-3 7/8	....	3.13
Depth	3 3/4-4	3 3/4-4	4.75
Lateral line.....	44-52	48-53	40-56
Above 1.1.	10	....	10
Predorsal	24	....	23
Teeth	2, 5-4, 2	2, 5-5 or 4, 2	2, 5-4, 2

Some of the discrepancies can no doubt be accounted for by the fact that the writer's measurements included both adult and immature, while very probably the others refer chiefly to mature specimens. The fin formulas agree with Fowler perfectly, as do other points of diagnosis.

C. M. BREDER, JR.,
U. S. Bureau of Fisheries.